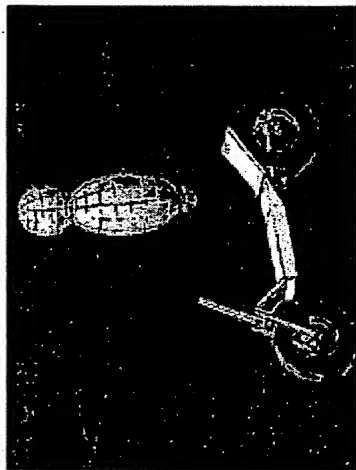


Figure 1

**INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER**

Fujii et al.

Appl. No.: Unknown Atty Docket: FY.51395US0A



(b)



(a)

Figure 2.

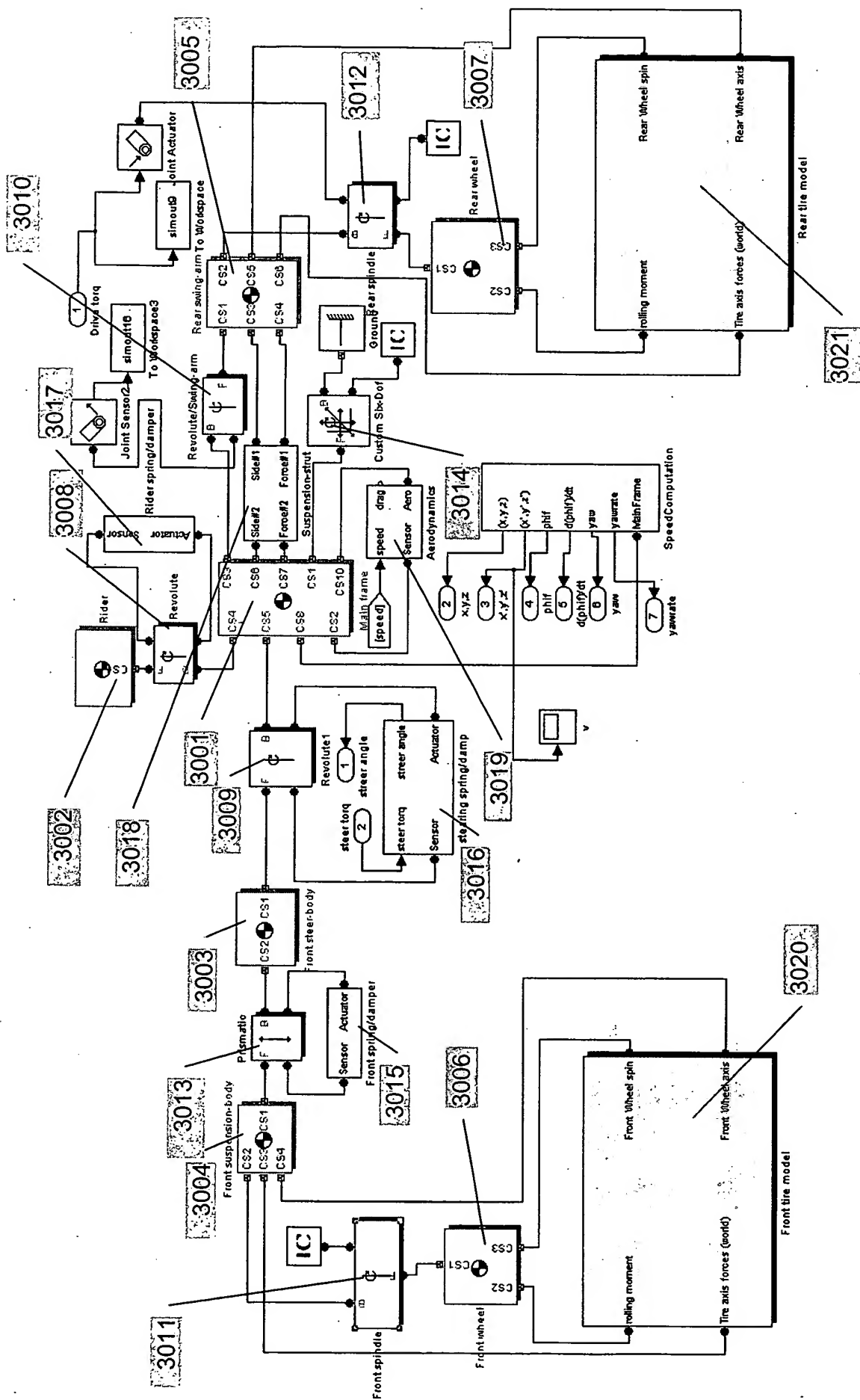


Figure 3

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

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INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

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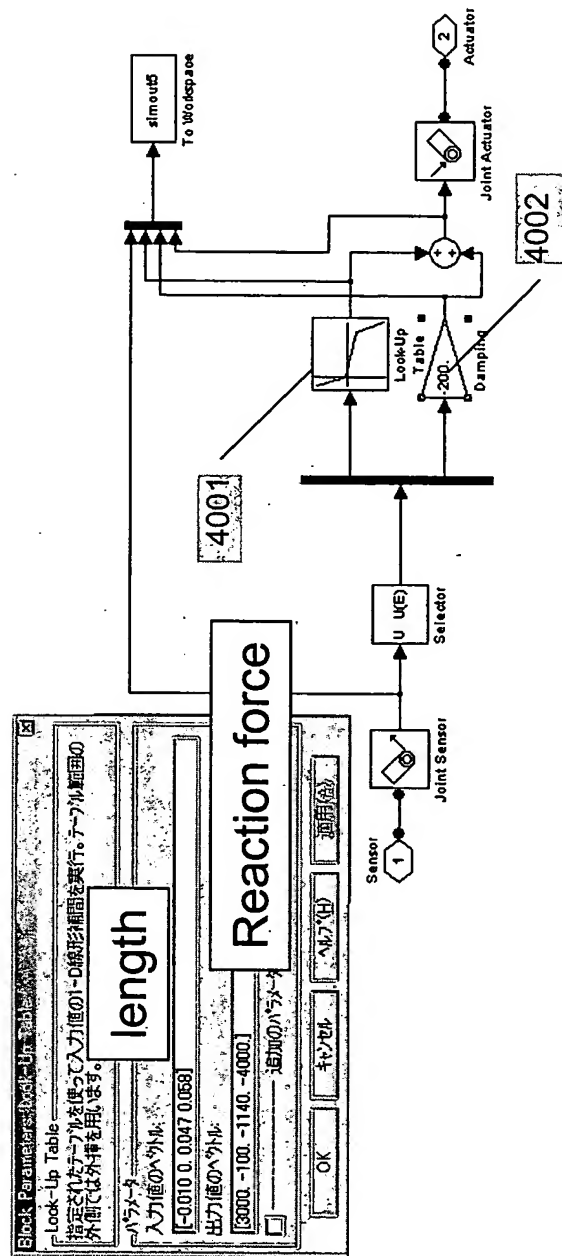


Figure 4

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

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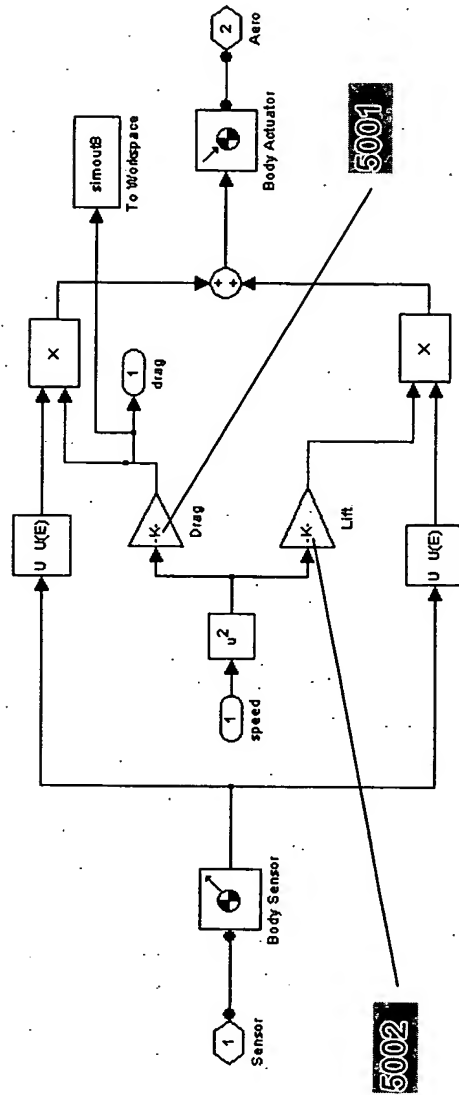


Figure5

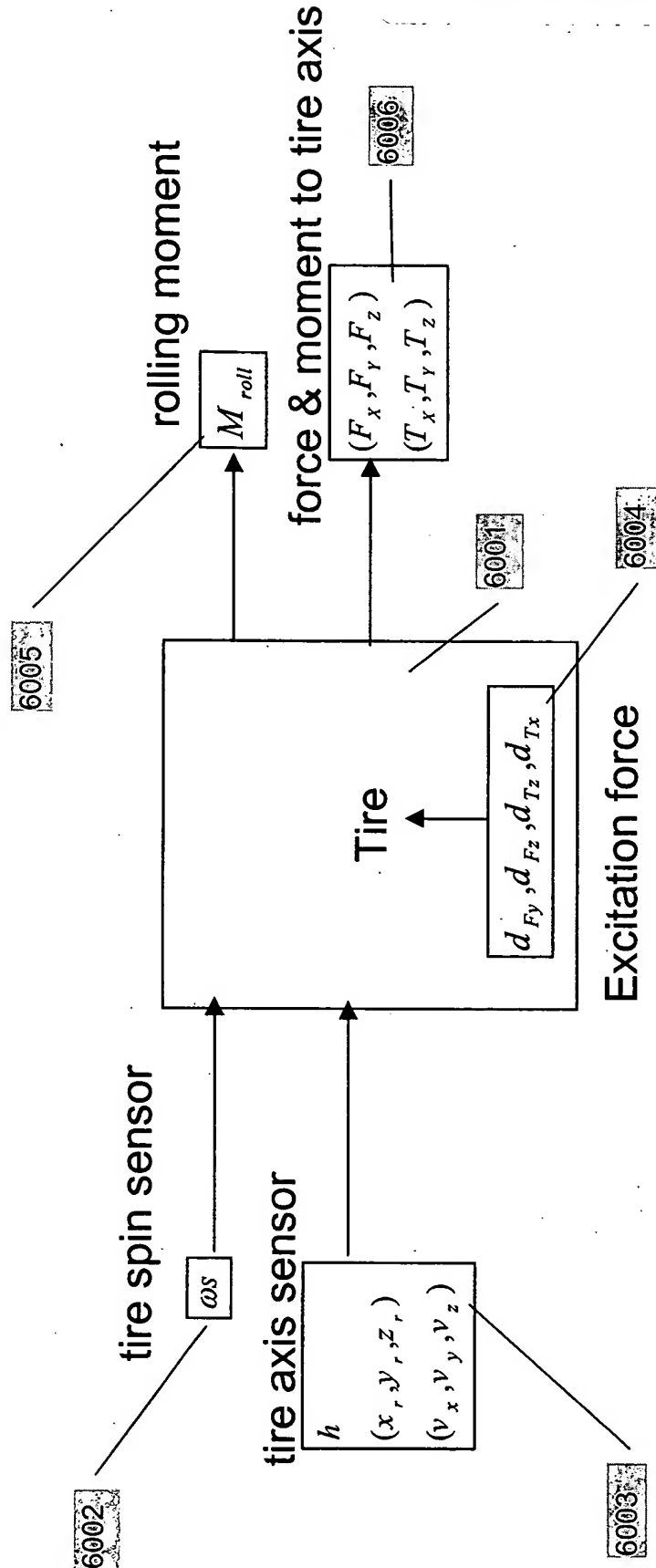


Figure 6:

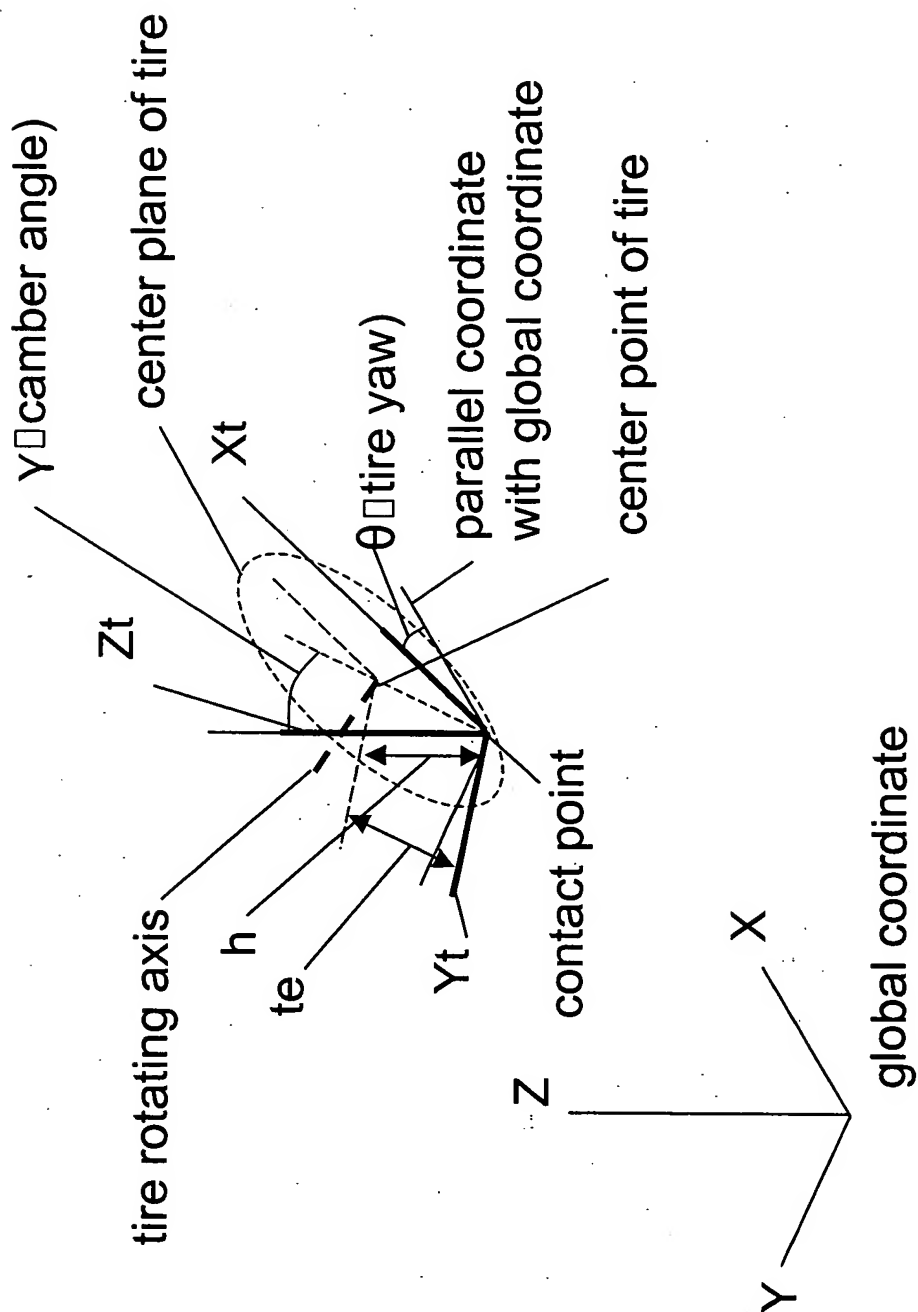


Fig.7

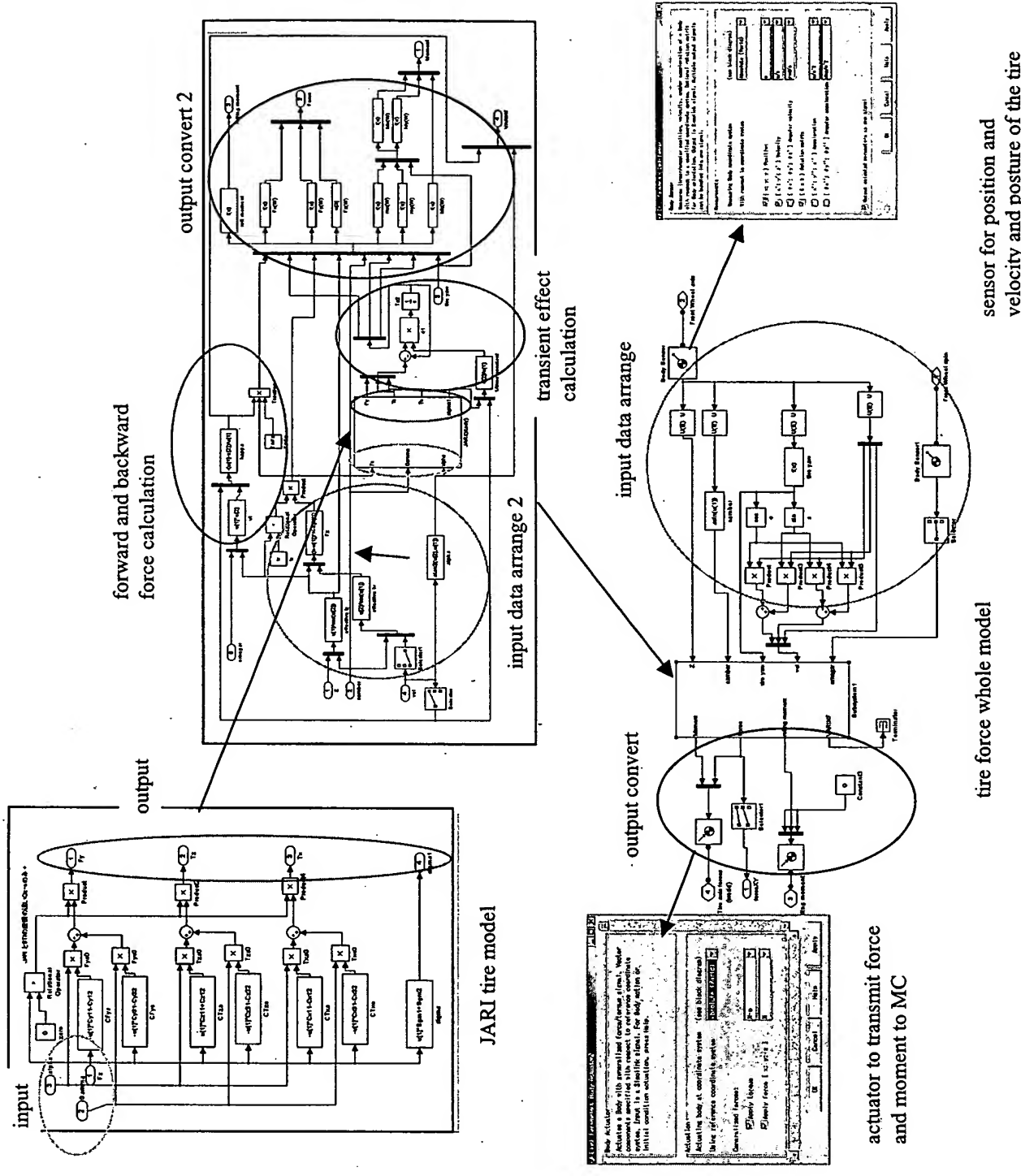
```

1  X Tracton/Spool/Fz.
2  Tract=1.0
3  X Tire radius a
4  rad=0.201
5  X Tire Damping N.m/s
6  D=8000
7  X Tire Spool constant N/m
8  K=40000
9
10 Xline 5cf deg
11
12 r=180/pi
13 X Kf(cmkcf/c)N/m
14 Cx1=0.00880
15 Cx2=0.132
16 Cx3=0.018
17 Cx22=0.178
18 X Kf(cmkcf)N/m
19 Cx11=0.111
20 Cx22=0.128
21 Cx15=0.111
22 Cx22=0.128
23 X Kf Nf(cmkcf/c)N/m
24 Cx11=0.00448
25 Cx22=0.0488
26 Cx31=0.0022
27 Cx22=0.0214
28 Cx11=0.00304
29 Cx22=0.02484
30 Cx11=0.00378
31 Cx22=0.08878
32 X Kf(cmkcf)N/m
33 Cx11=0.111
34 Cx22=0.128
35 Cx15=0.111
36 Cx22=0.128
37 Cx11=0.111
38 Cx22=0.128
39 Cx15=0.111
40 Cx22=0.128
41 X m/s^2 a
42 Sx1=0.0005
43 Sx2=0.00318
44 Sx3=0.0
45 Sx1=0.0
46

```

tire_data.m

(a)



(b)

Figure 8.

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown Atty Docket: FY-51395US04

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

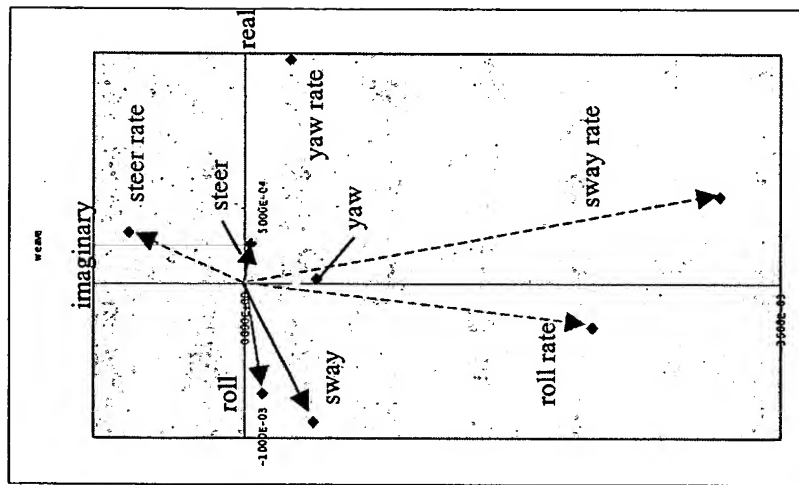


Fig.9

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

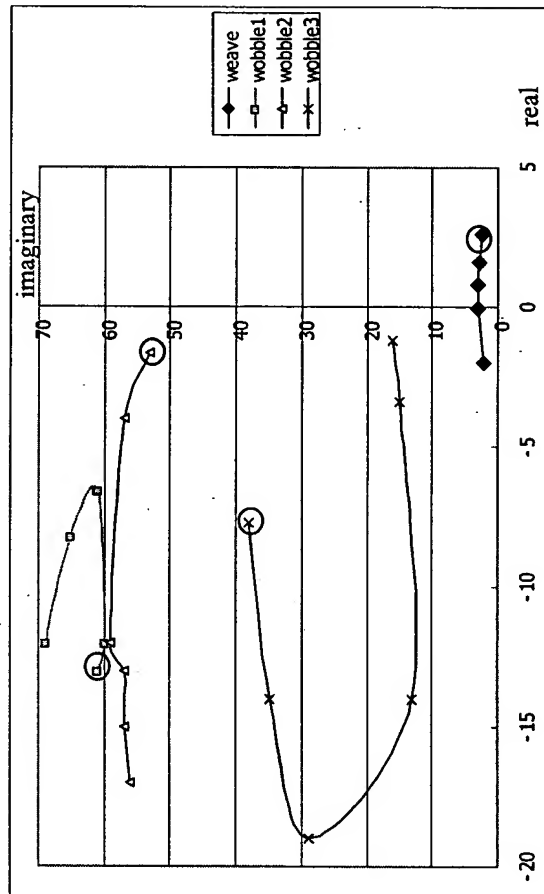
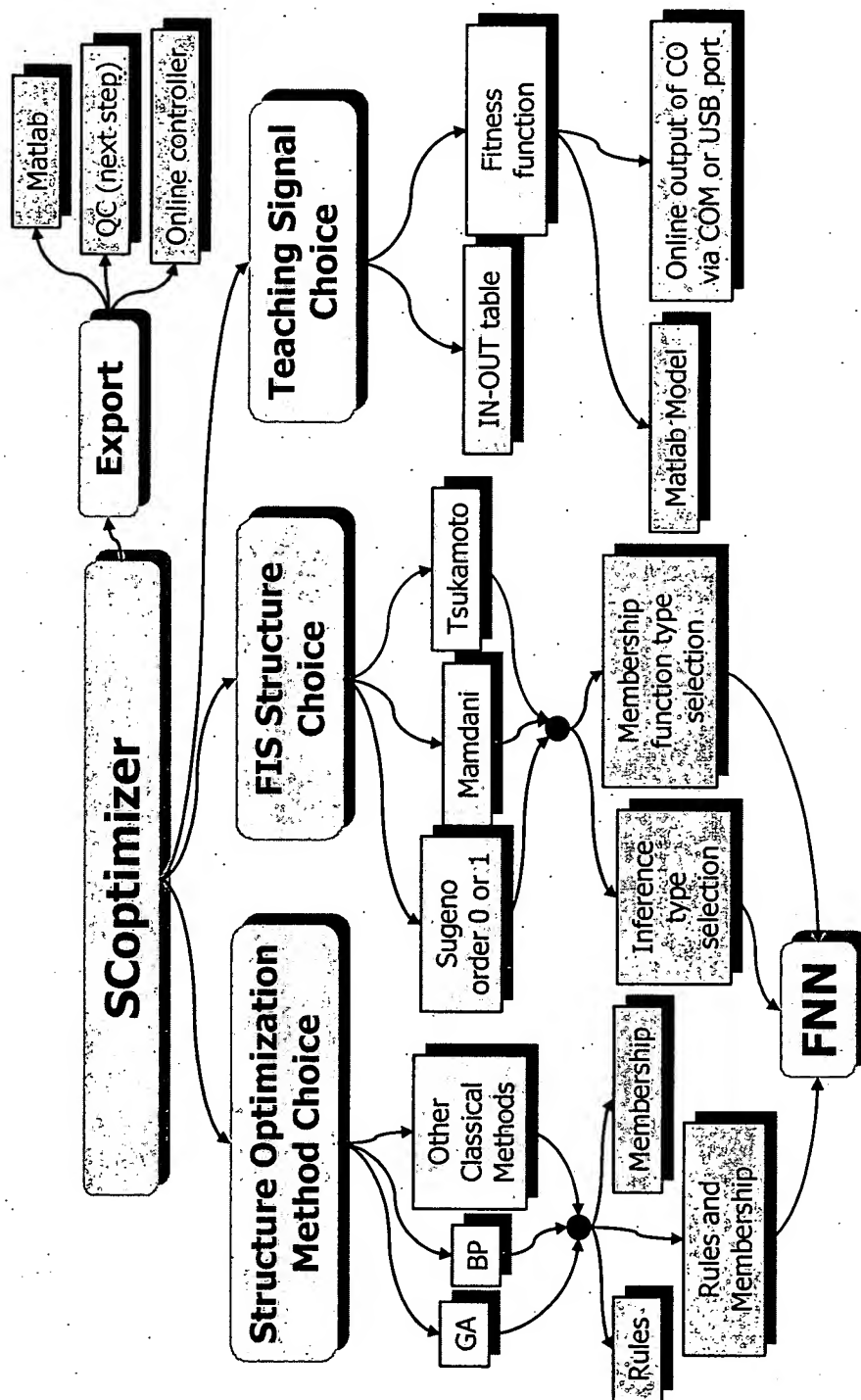


Fig.10



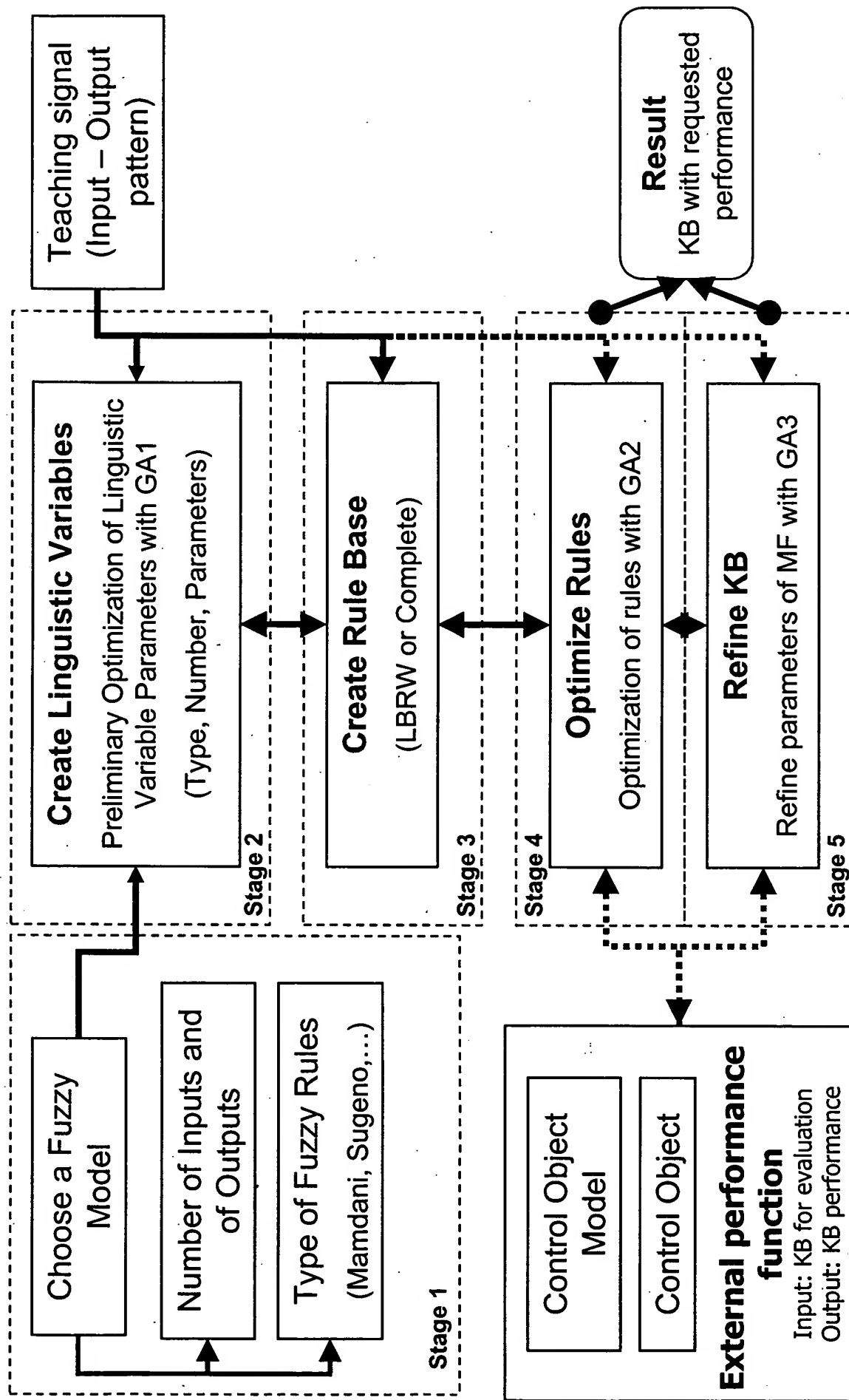


Figure 12A

Figure 120

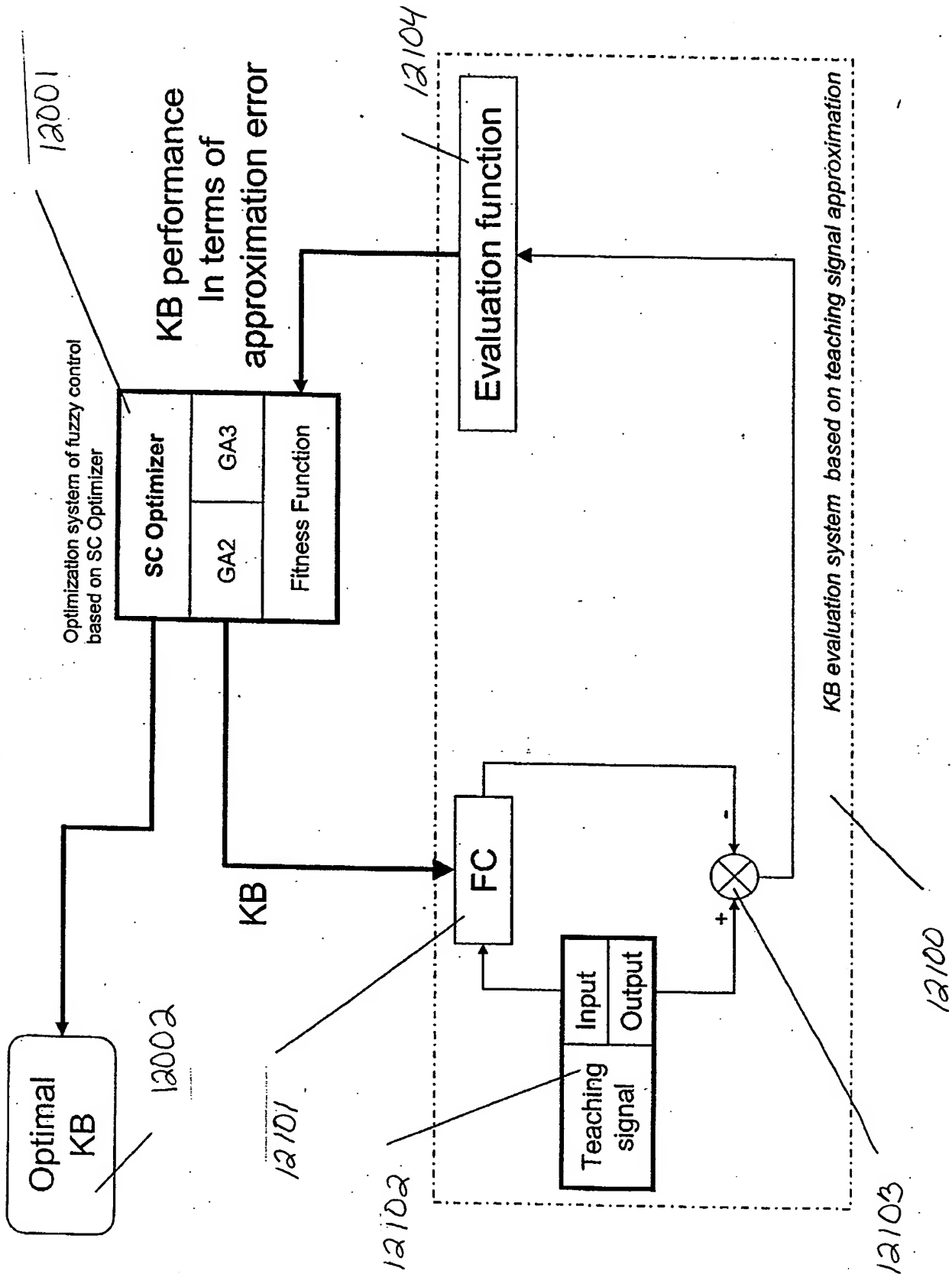
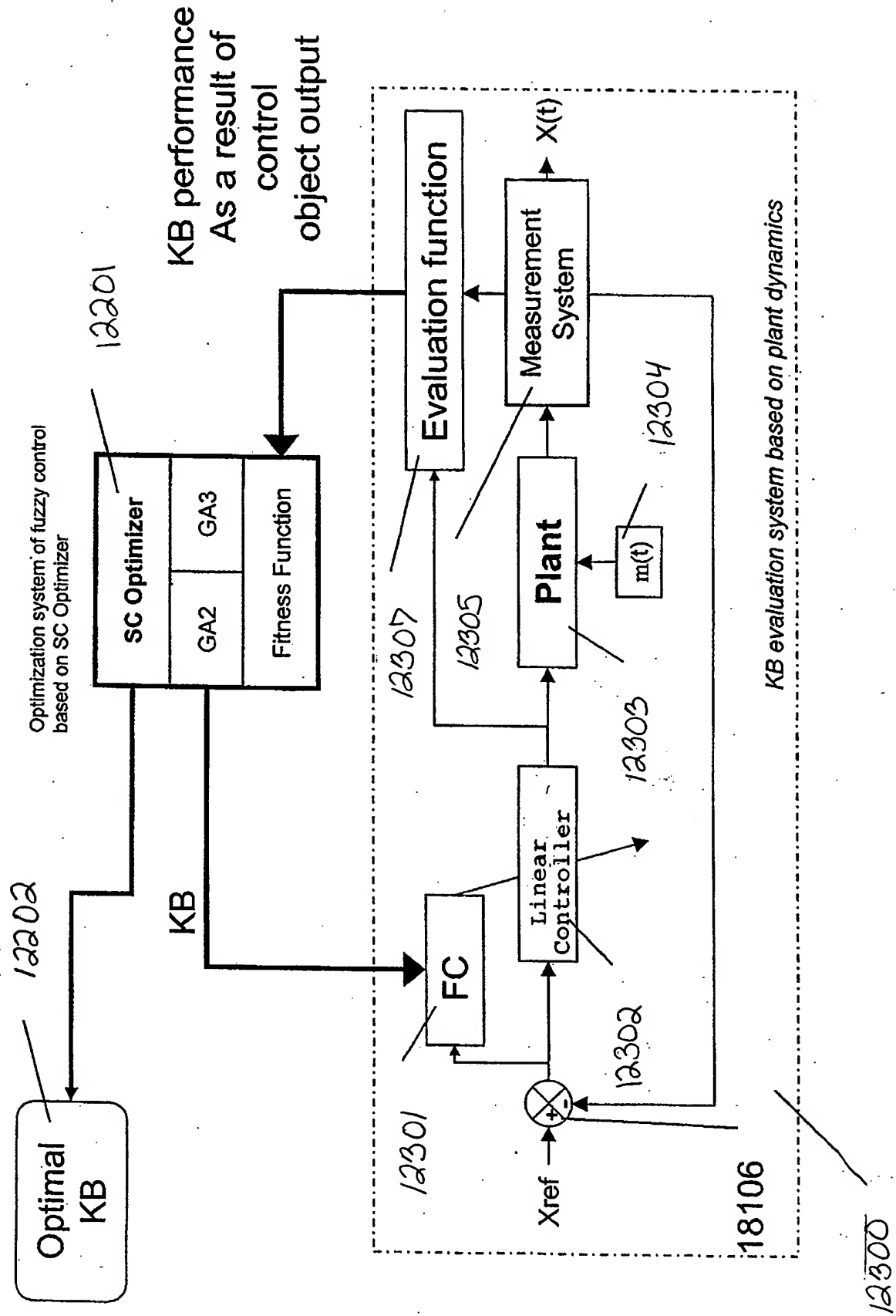


Figure 12C



Appl. No.: Unknown

Figure 13

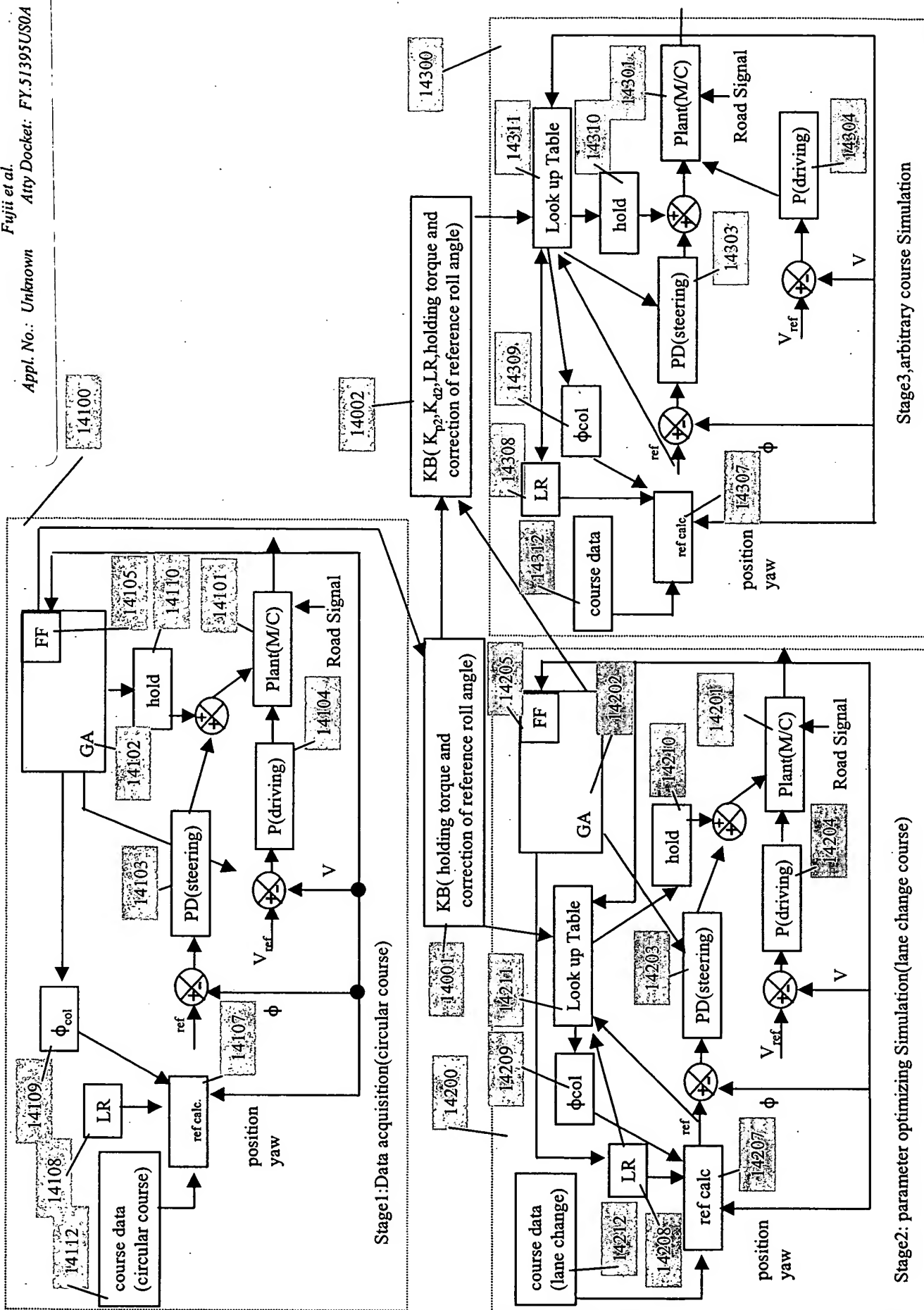


Figure 14

Appl. No.: Unknown *Fujii et al.*
Atty Docket: FY.51395US0A

Atty Docket: FY.51395US0A



INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

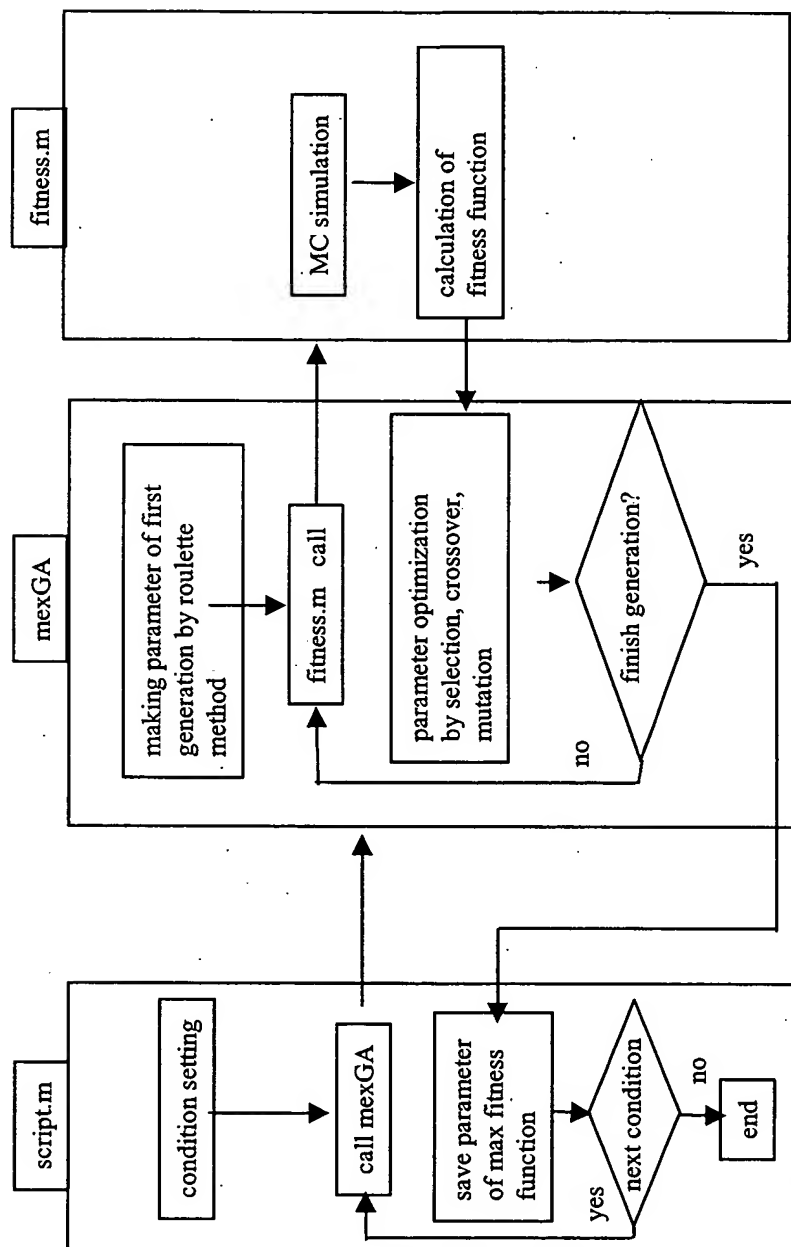


Fig.16

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

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Appl. No.: Unknown

Atty Docket: FY.51395US0A

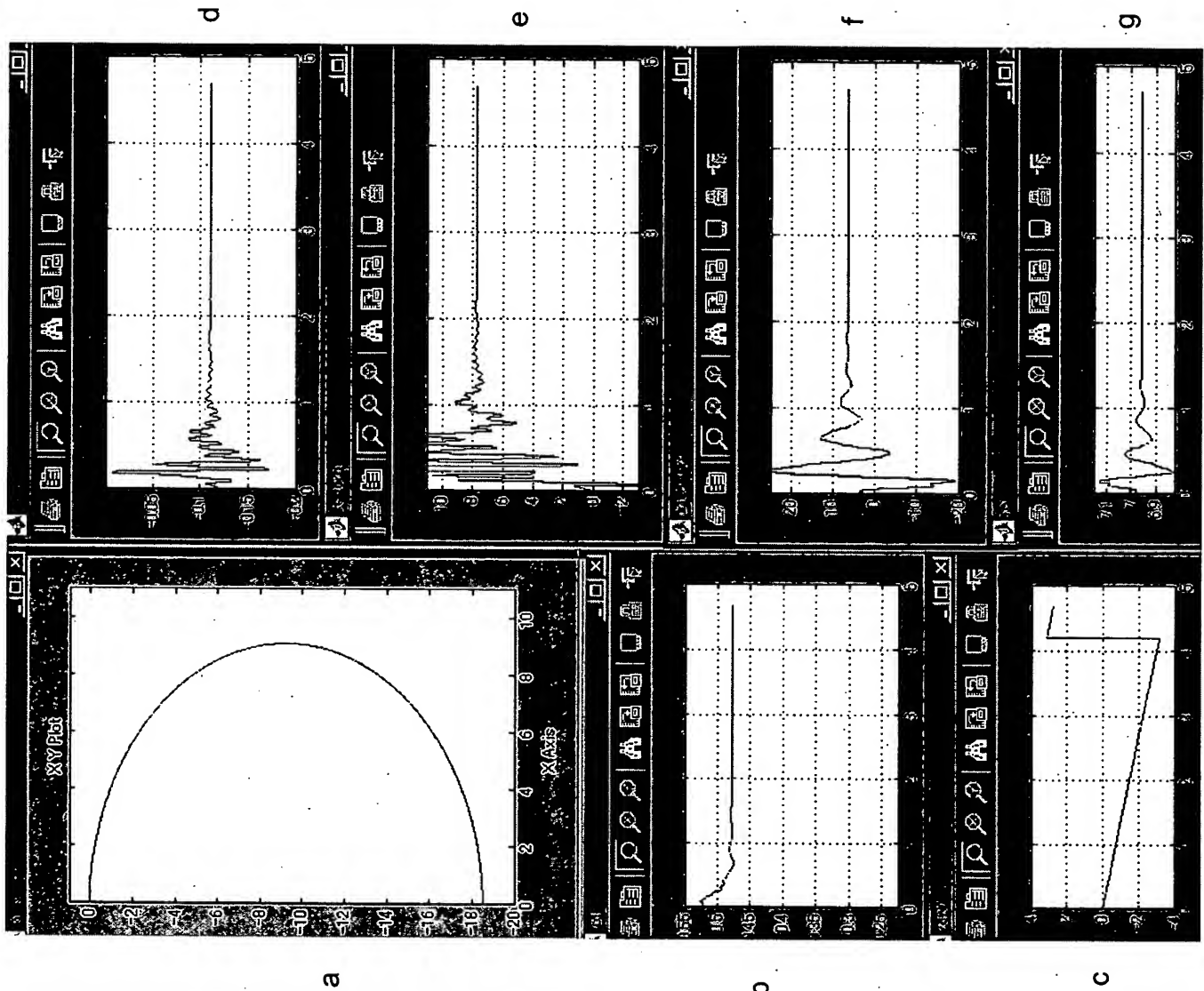


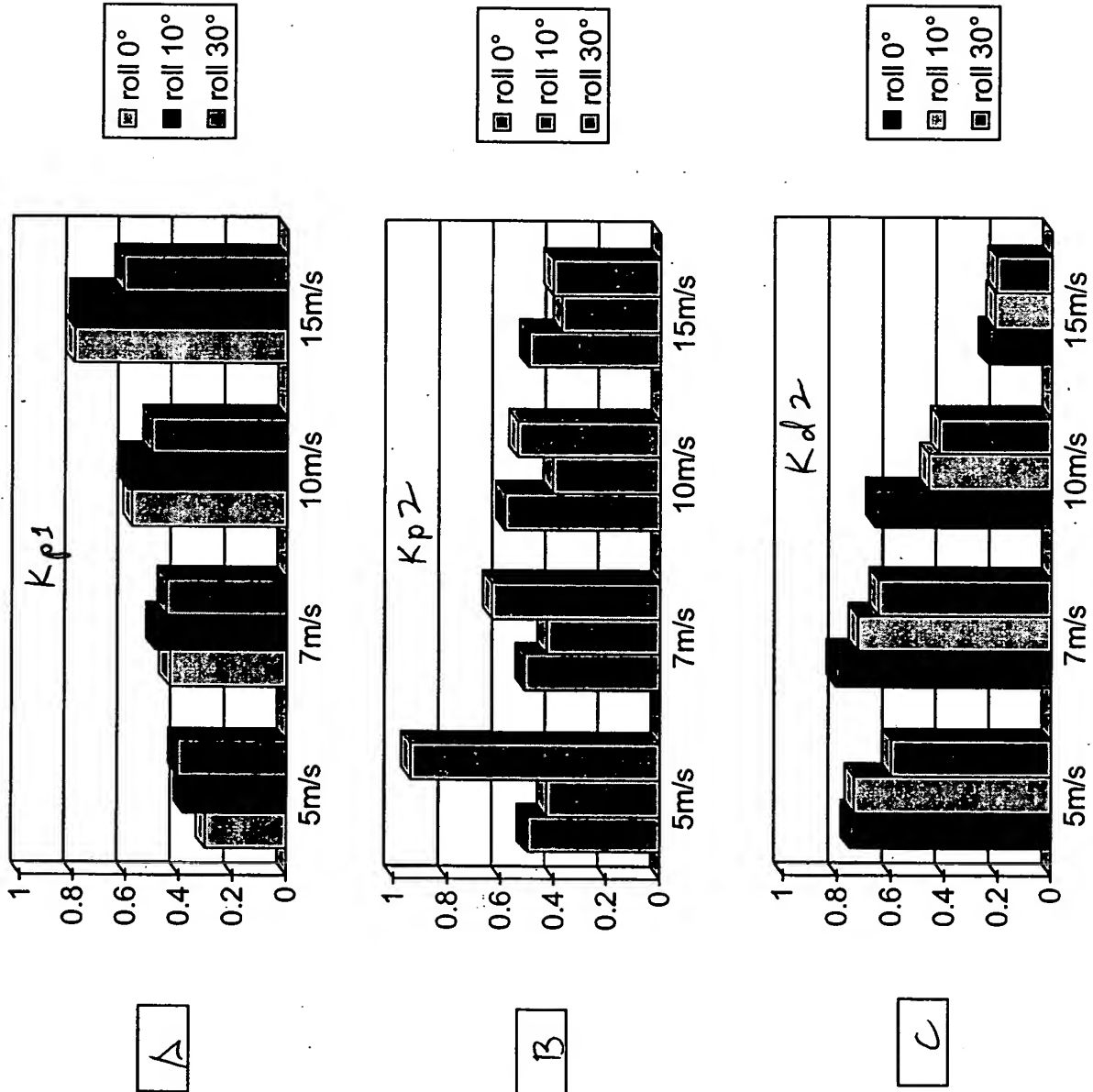
Fig.17:

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

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Atty Docket: FY.51395US0A



INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

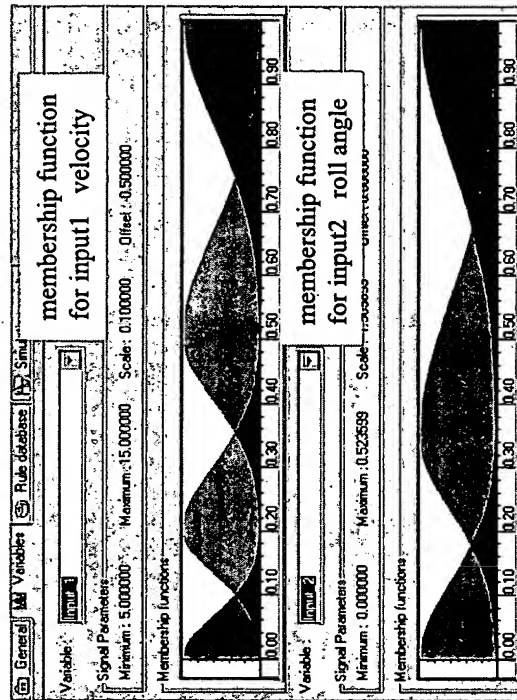
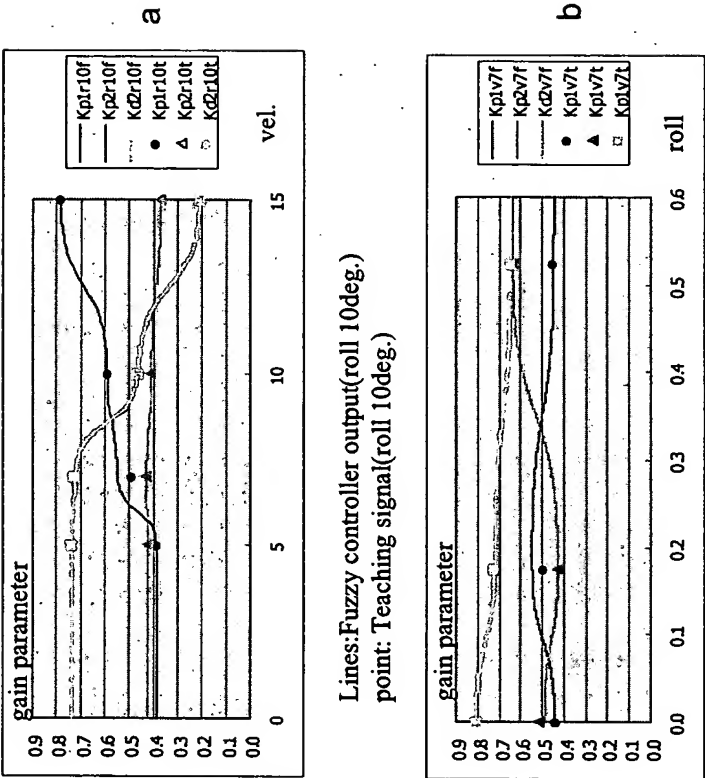


Fig.19

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown Atty Docket: FY.51395US0A



Lines:Fuzzy controller output(roll 10deg.)
point: Teaching signal(roll 10deg.)

Lines:Fuzzy controller output(vel.7m/s)
point: Teaching signal(vel.7m/s)

Fig.20

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

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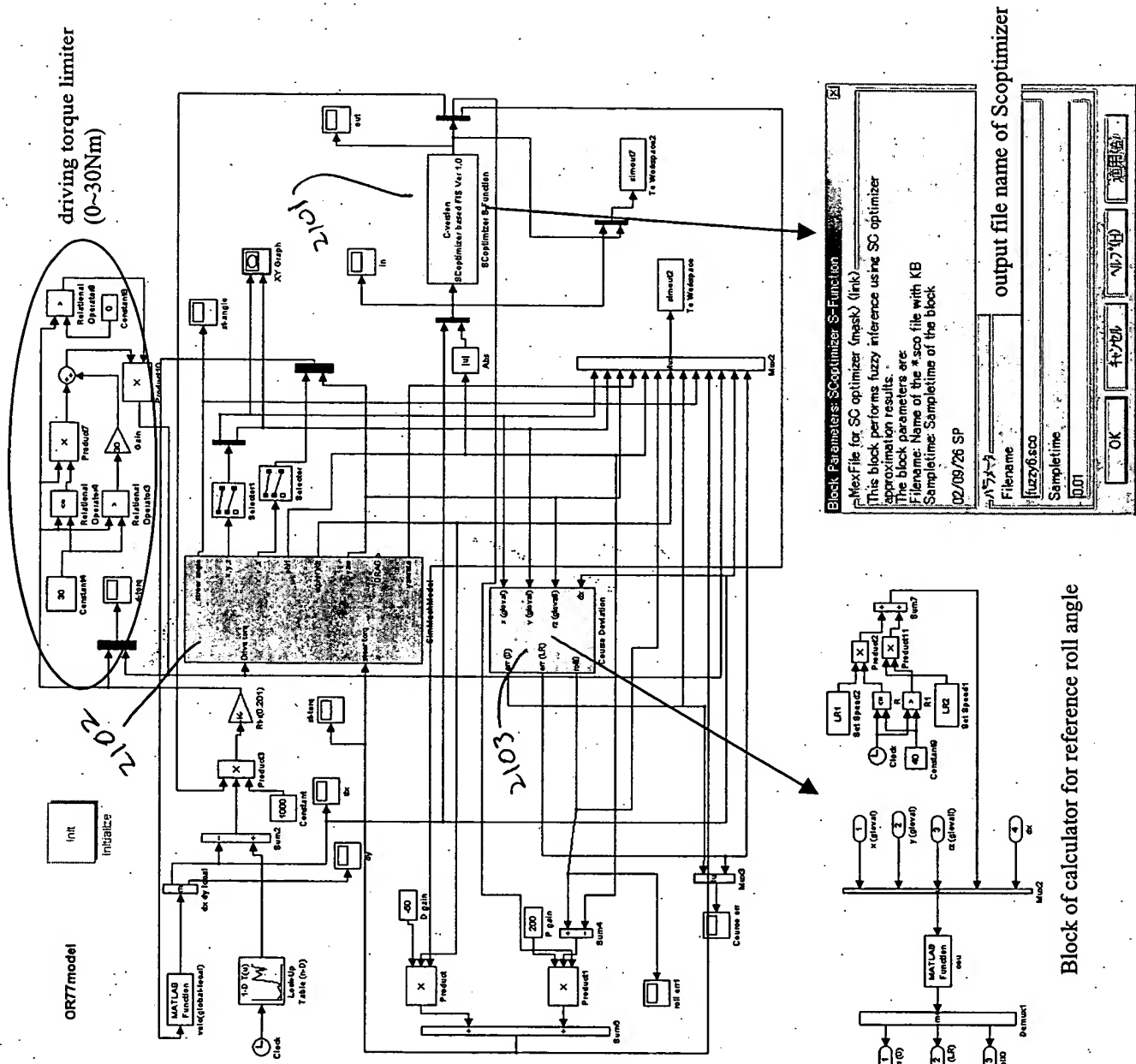


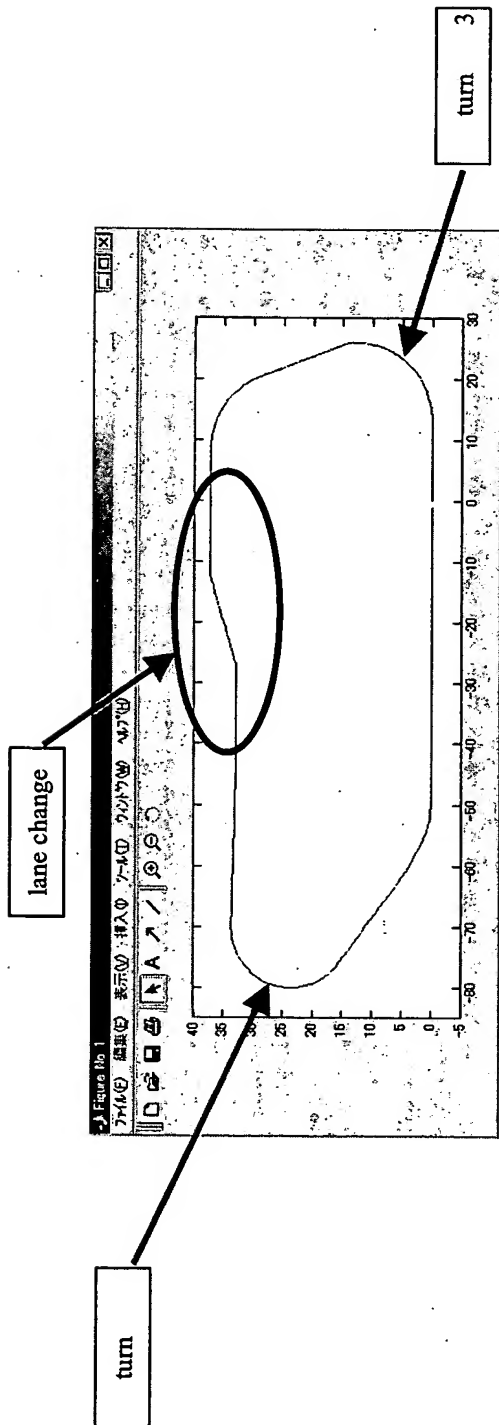
Figure21

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

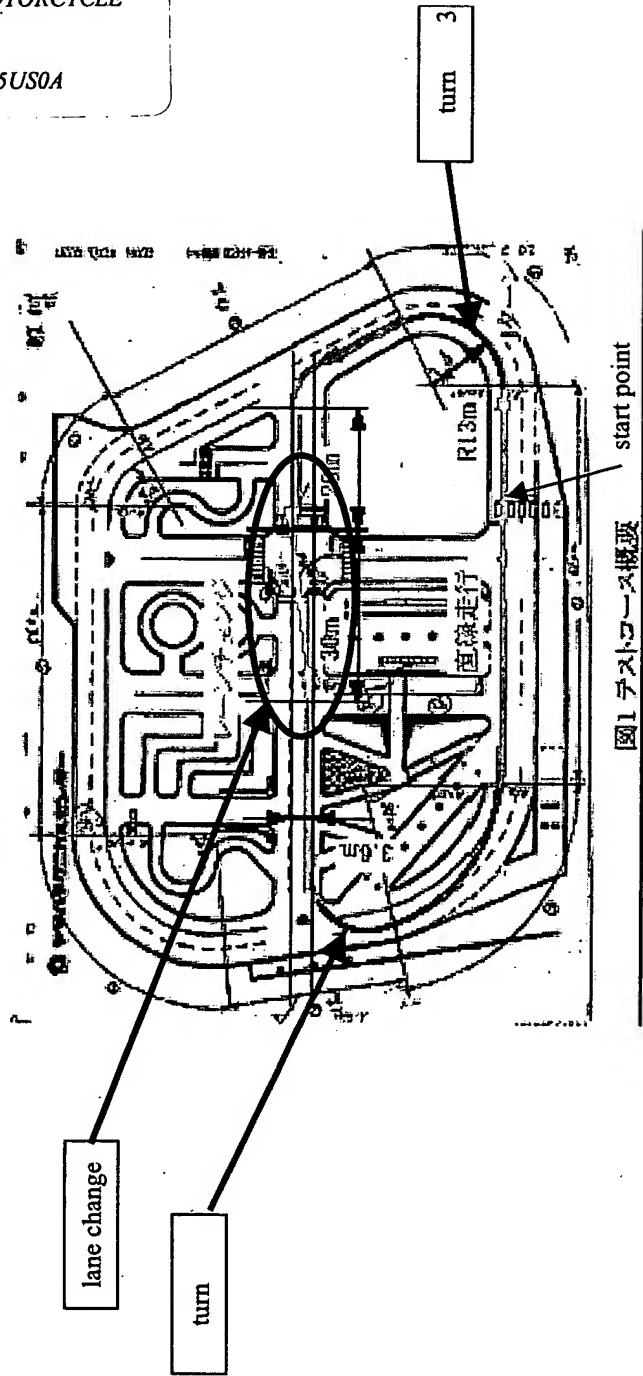
Fujii et al.

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Atty Docket: FY.51395US0A



(a) the simulation course



(b) the map of the actual test course

Figure 22

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

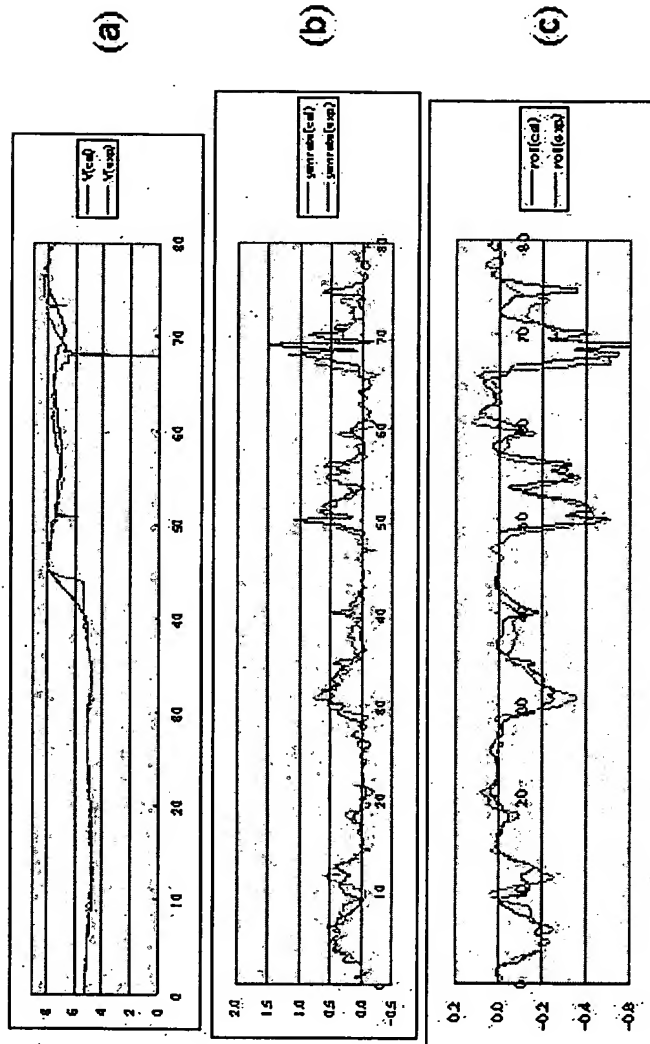


Fig.23 (a-c from above)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

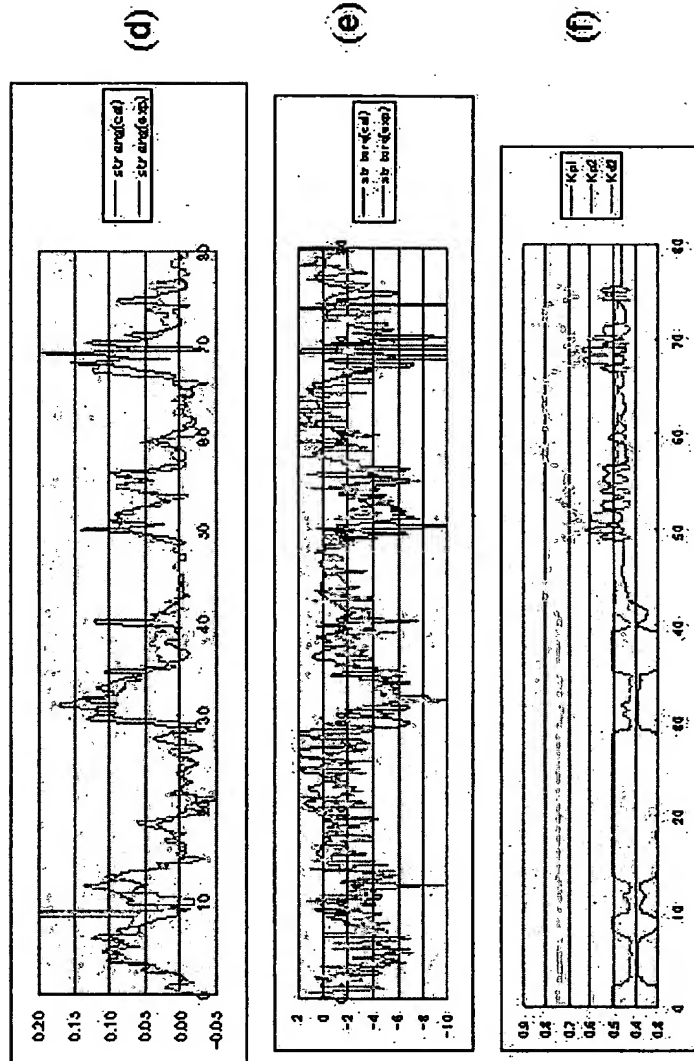


Fig. 23 (d-f. from above)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

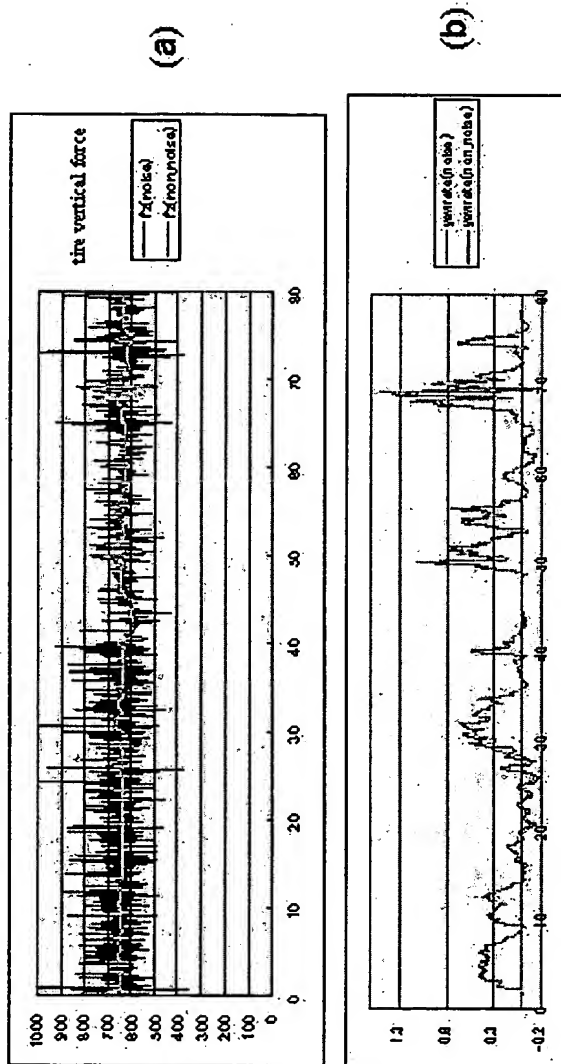


Fig. 24 (a-b from above)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown Atty Docket: FY.51395US0A

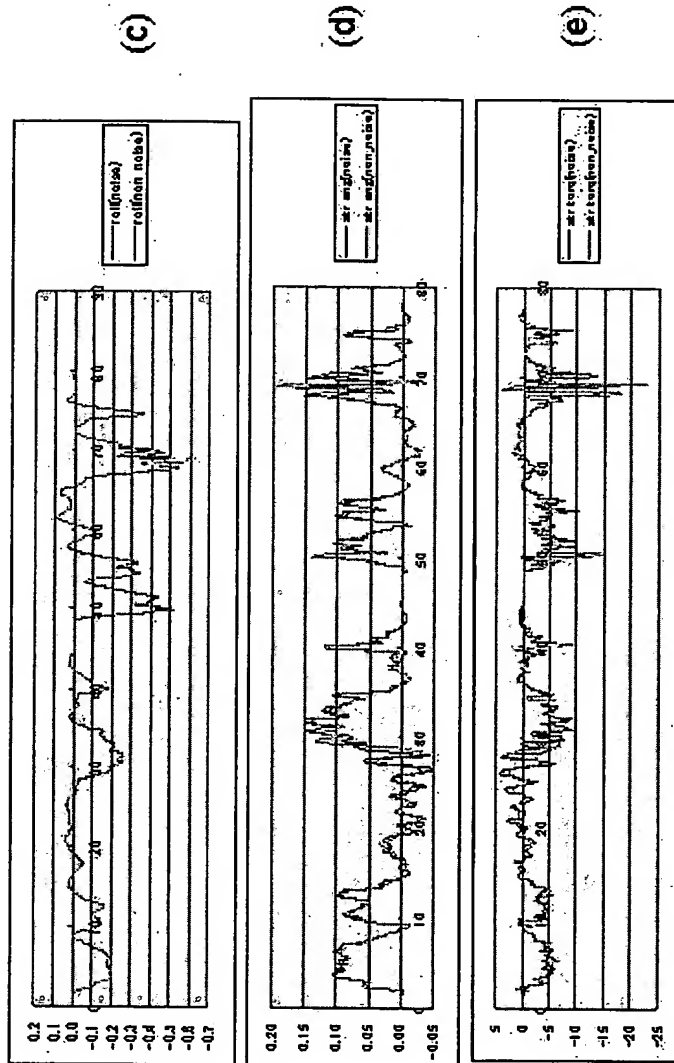


Fig. 24 (c-e from above)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

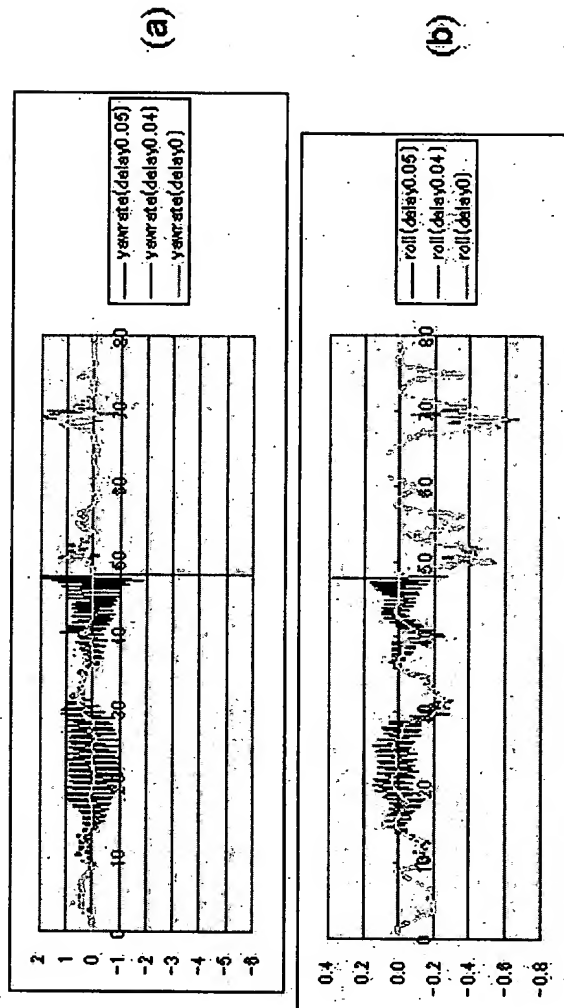


Fig.25 (a-b from above)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

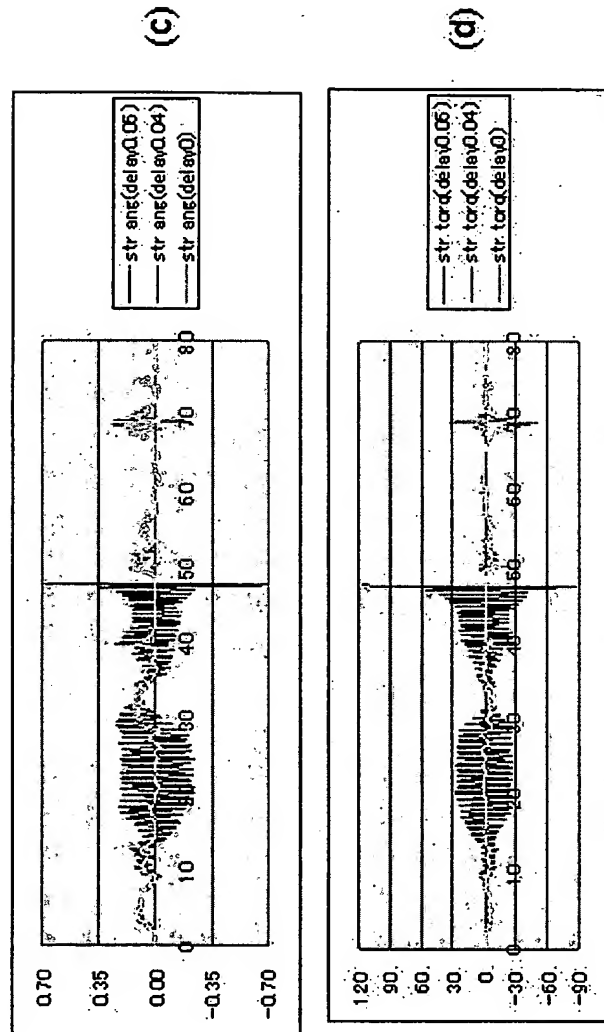


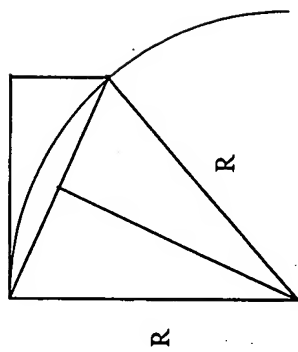
Fig.25 (c-d from above)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

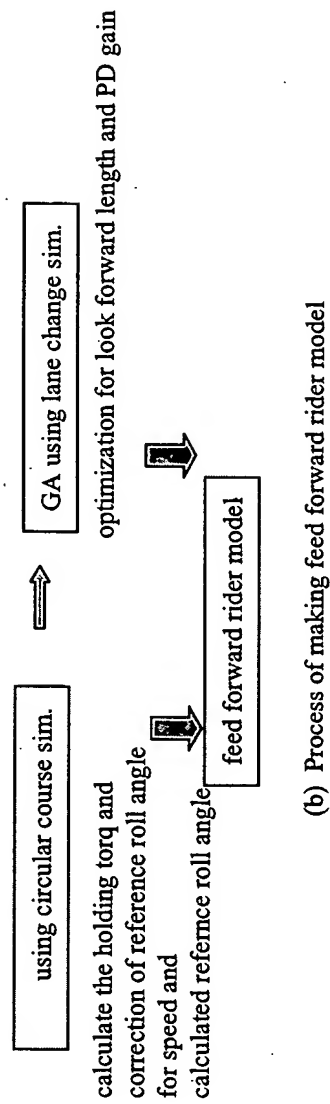
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Atty Docket: FY.51395US0A



(a) Relation between deviation of course at length of reference and turning radius



(b) Process of making feed forward rider model

Figure 26

Fujii et al.

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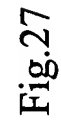


Fig. 27

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

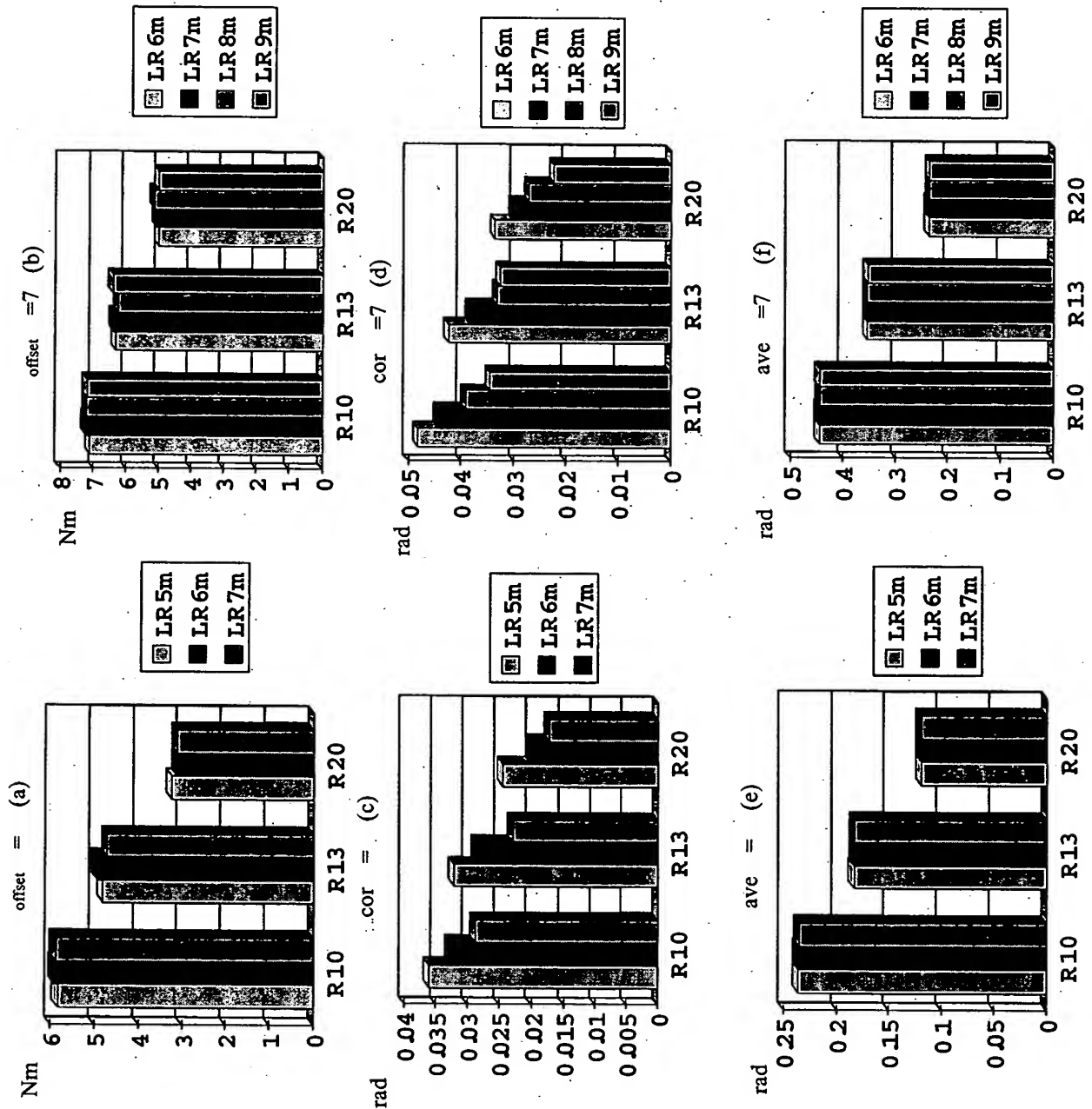


Fig.28 (a~f)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

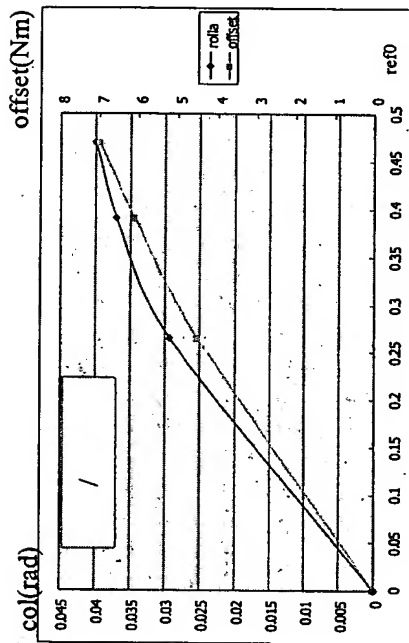


FIG 29B

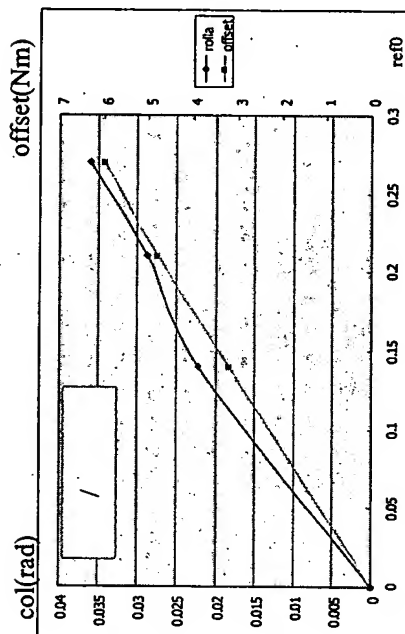


FIG 29A

Fig.29(a~b from left)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

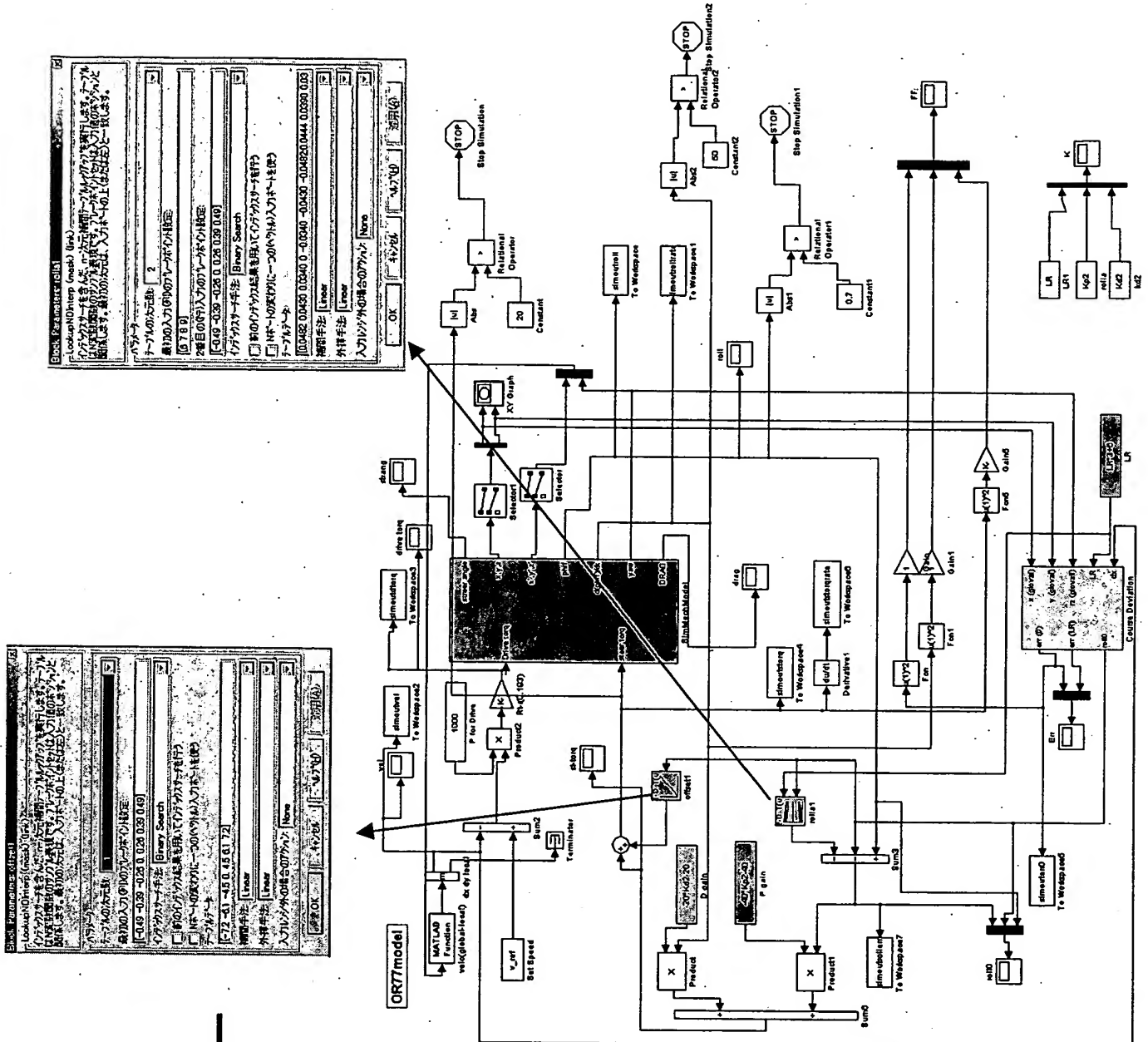


Fig.30 (b) Model for lane change simulation

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

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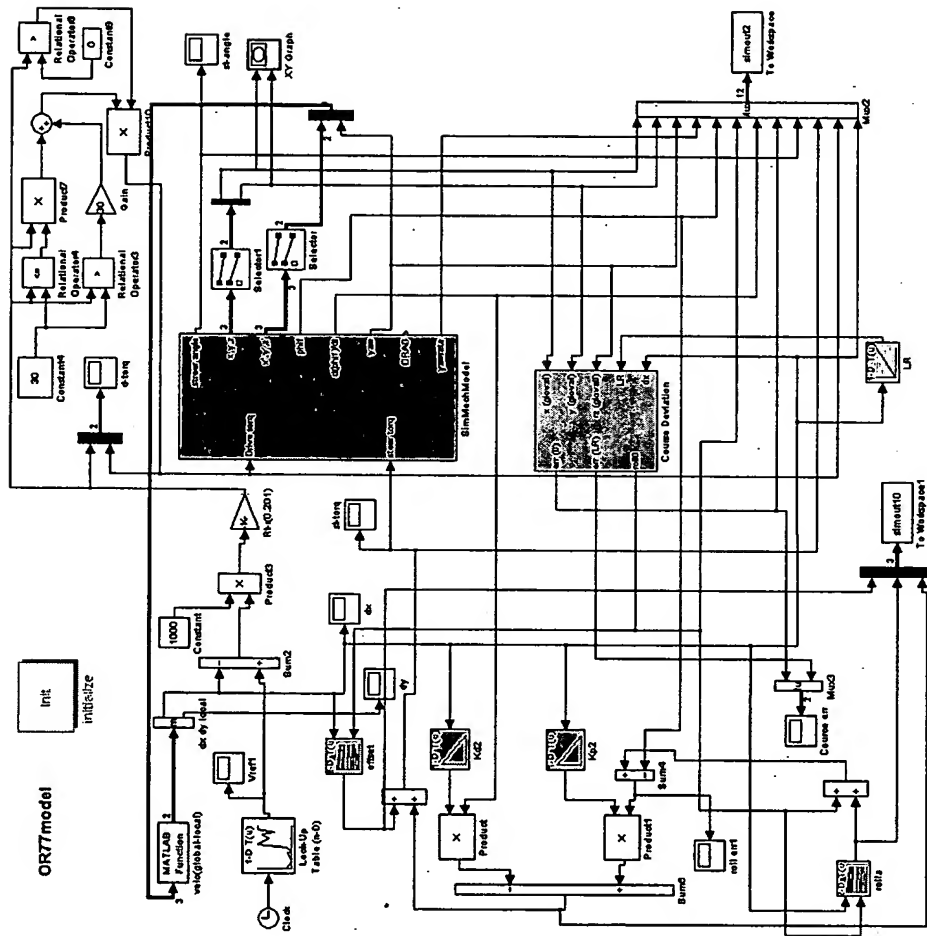


Fig.31

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown Atty Docket: FY.51395US0A

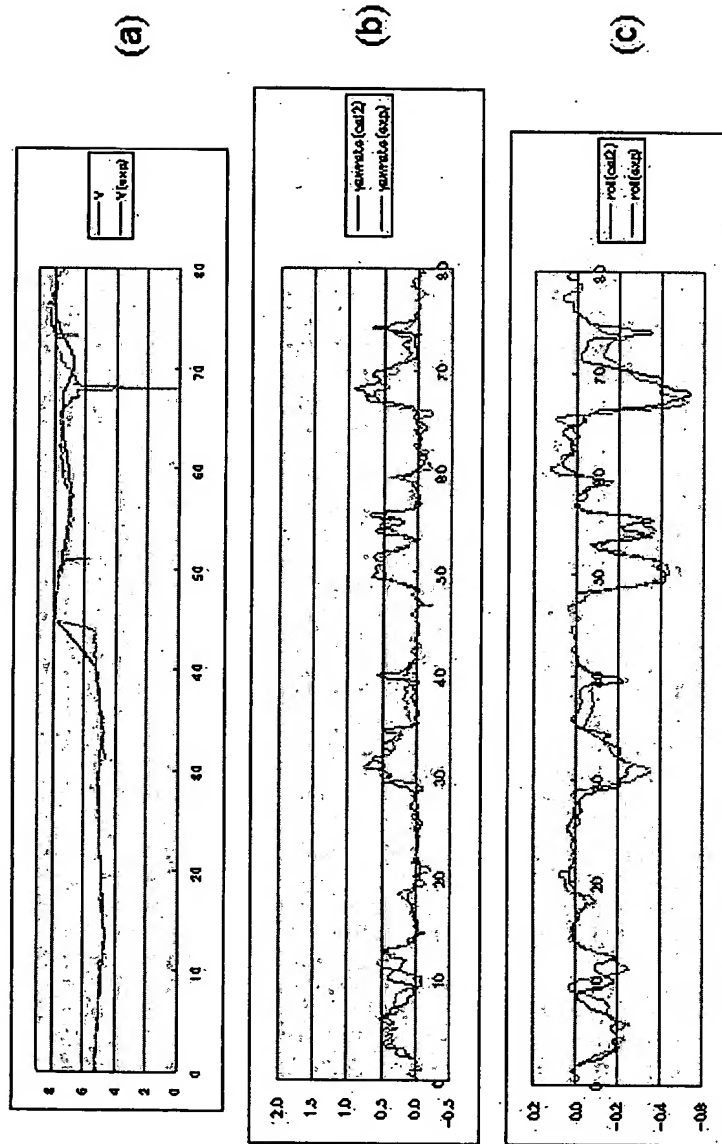


Fig.32 (a-c from above)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT-COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

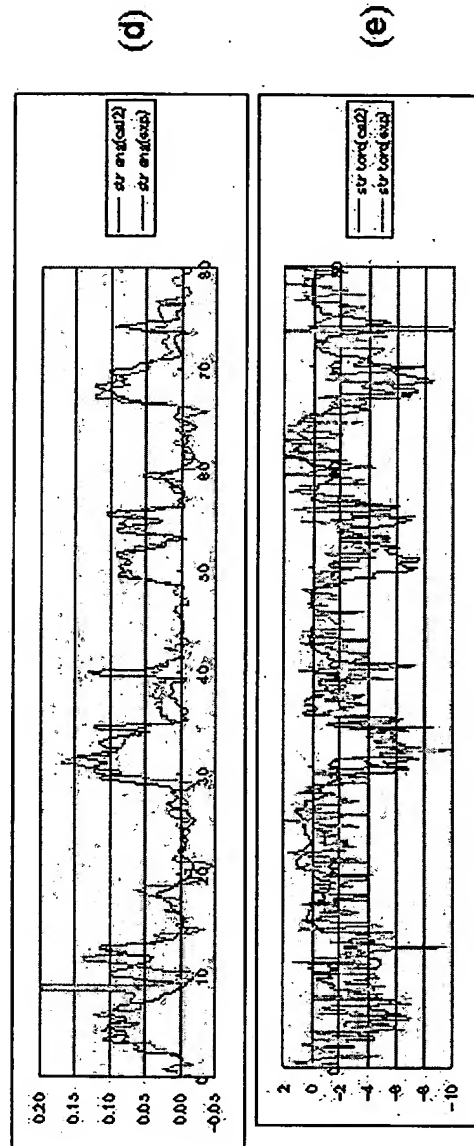


Fig.32 (d-e from above)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

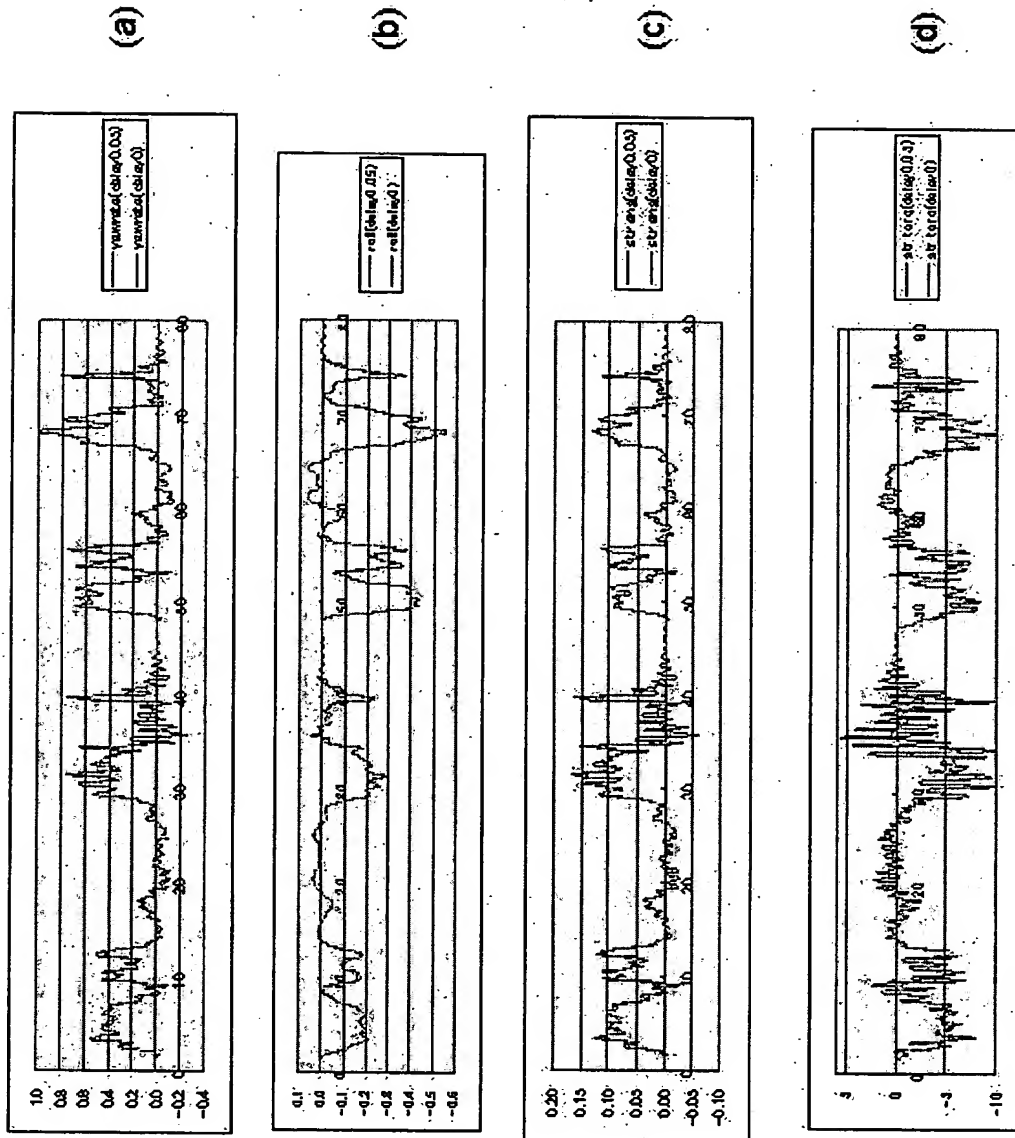


Fig.33 (a-d from above)

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

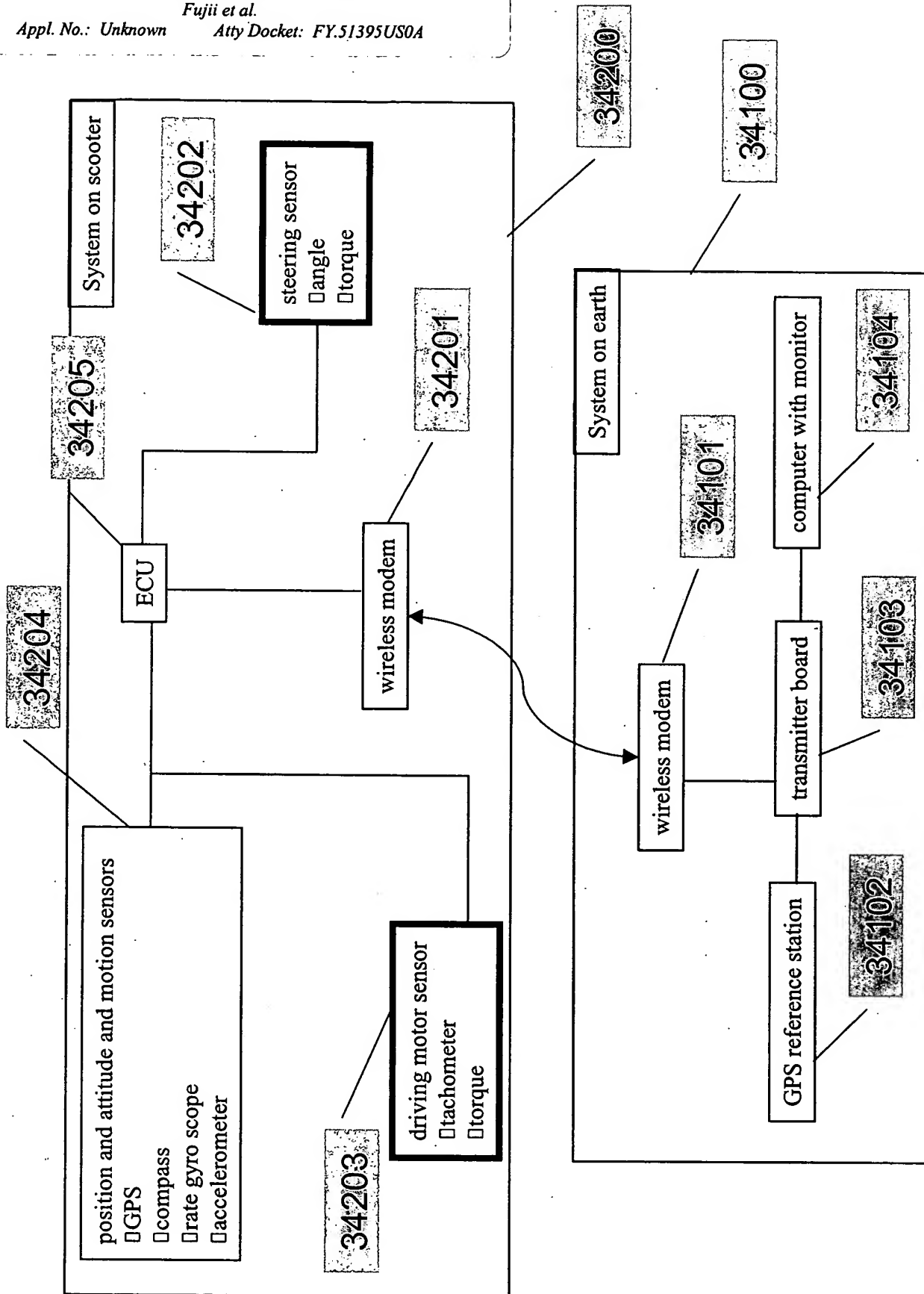


Fig.34

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A

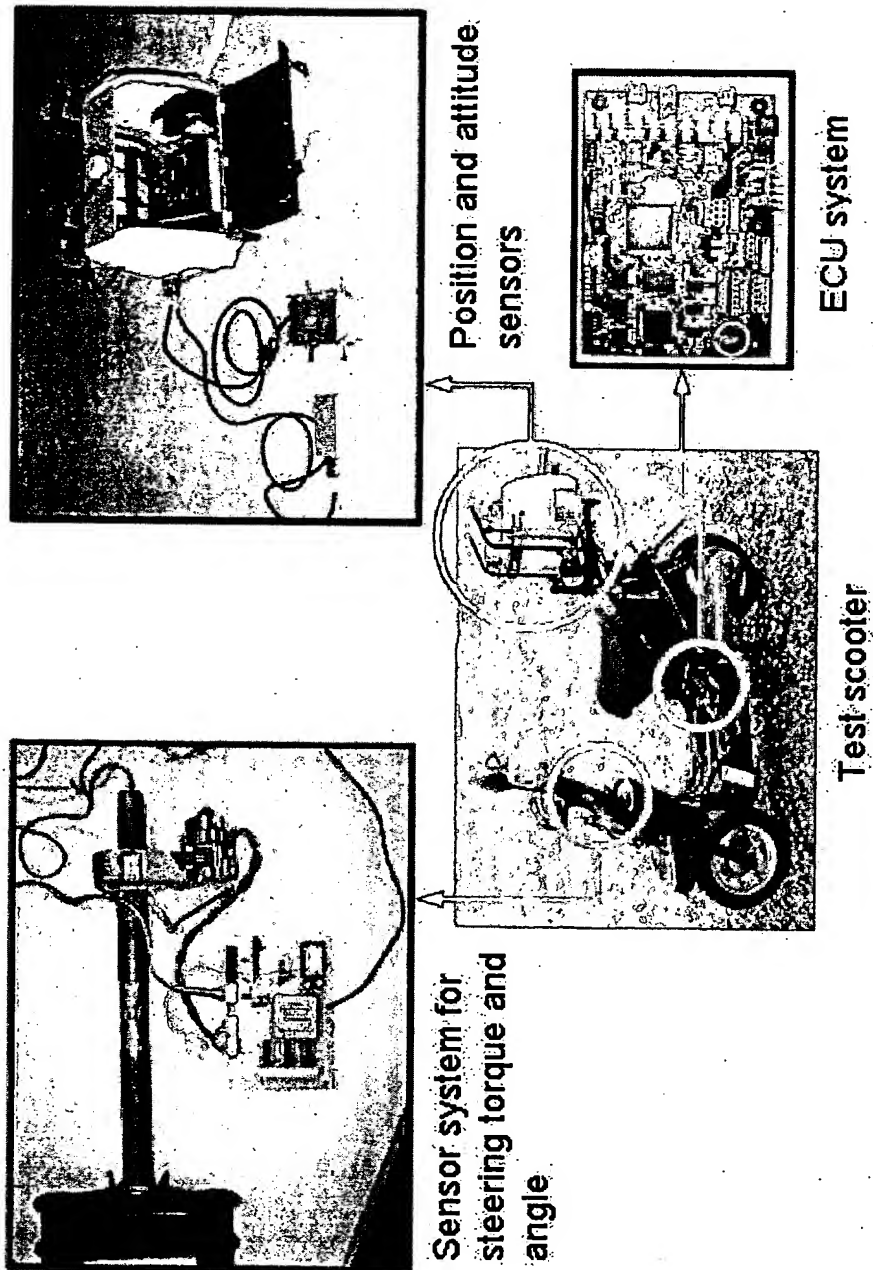


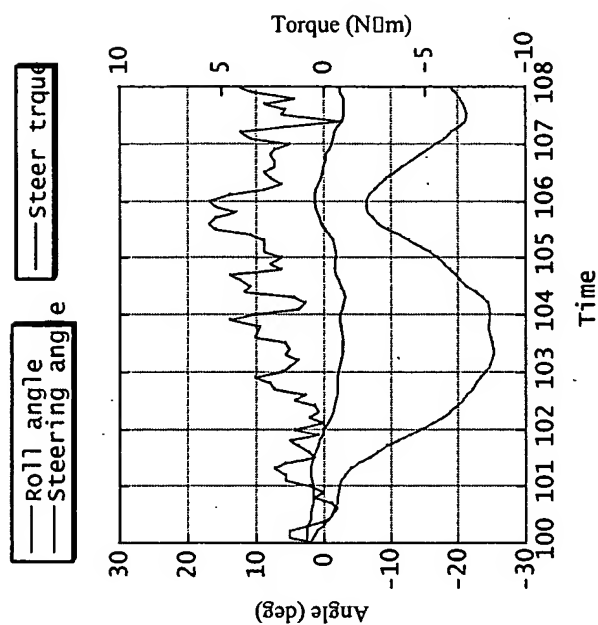
Figure 35

INTELLIGENT ROBUST CONTROL SYSTEM FOR MOTORCYCLE
USING SOFT COMPUTING OPTIMIZER

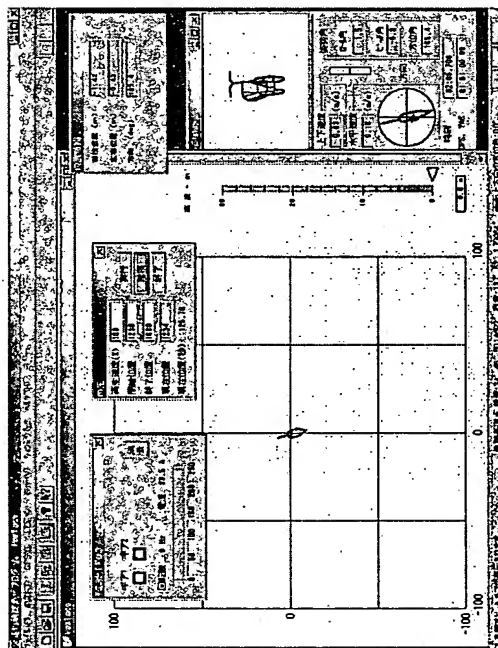
Fujii et al.

Appl. No.: Unknown

Atty Docket: FY.51395US0A



(b) Measured data



(a) Realtime monitor of
position and attitude

Figure 36